

JACG FACE

NEWSLETTER
Vol. 2 No. 9

May 1983

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THE JERSEY ATARI COMPUTER GROUP

From the Editor's Desk ...

The awesome April business is over and that word will not be mentioned in this newsletter again. At least, not for another year. In any case I have some serious business on the agenda this month but before I begin, I would like to thank the following JACG members for help in typing articles for this Newsletter. Larry Ficks, Cecilia Fletcher, Alan Hartman, Howard Johnson, Danae Koch, Marsha Rogers, Graham Van Slyke. I know I have missed a couple of names and I will mention them next time. In addition to appreciating the magic fingers of the people just mentioned, I would also like to thank the JACG members who have contributed to the Newsletter in the last few months. It is their effort that continues to make the JACG Newsletter a valuable resource. The next topic is a natural follow-on.

Just like Warner communications stock, submissions to the Jersey Atari Computer Group Newsletter are **down**. If this Newsletter is to continue to be one of the best User Group Newsletters in the country, I need MORE articles, reviews, programs, tutorials, etc. My backlog of material is now gone and unless I get more material, the size will decrease and the quality will decline. For information of Newsletter submissions, see "Writing for the JACG Newsletter" elsewhere in this issue.

Next item on the agenda - Special Issues. I plan to continue having special issues every two months or so. I cannot do this without your help. So far I have received only three game reviews for the June ALL Games Issue. No other game-related material has come in. **TYPE OR GET OFF THE KEYBOARD!!** Get that game-related material to me by the May 20th. Coming in August will be an **ALL PROGRAMMING** issue. This will be a real blow-out of a Newsletter. Programs, tutorials, programming techniques, language reviews will all be included. If you have a program that you have written or any special programming techniques that you would like to share with other JACG members send them to me and I will publish

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LATE FLASH

- 1) Rumors of an ATARI 1201XL abound. Supposed to be compatible with everything, have built-in modem and expandable bus. Availability approx. 6 months.
- 2) Rumors of an ATARI 800XL and a 600XL. The 800XL supposedly has two microprocessors - a 6502 and a 68000 (16 bits, count 'em). Information is sketchy, film clip at 11:00.
- 3) In the "less reliable than a rumor" category, the author of *Planet Missionary*, that awesome new game for the ATARI, has let it be known that an ATARI version will not be forthcoming, **EVER**. Apparently, it will only be produced for the Commodore (of all the insults) computer. So stop calling your local ATARI computer dealers and asking for the game.

AND NOW A WORD FROM THE PRESIDENT....

By far the most overused, abused word in all of Atari User Groupdom is the word AWESOME. Zaxxon is awesome, the AtariWriter is awesome, Planet Missionary is awesome, Awesome is awesome. Well, let me tell you about awesome. Zion National Park is awesome, Bryce Canyon is awesome, Arches National Park is awesome, and so are Monument Valley and the Grand Canyon. The point I'm trying to make (albeit somewhat obtusely) is that your little old Atari computers are only that.... one little old part of LIFE... some pretty colors on a TV screen.... a few useful programs. I visited the above scenic sites (and more) one week ago and was glad to get a little perspective on what really is important and, yes, even awesome in the whole scheme of things. We sometimes (often?) get a distorted view of this useful toy called the Atari computer. Take time to enjoy your Atari, but don't take it too seriously. Spring is here; smell the roses.

Enough philosophy - time to write another awesome monthly presidential column. Let's begin with news.... Atari will offer \$50 rebates on the 400 - until the 400s are all gone. Micro Mainframe's new disk drive will be \$600, not the \$450 advertised. Rana will not have a double density drive for \$399 - that's for the single density drive. Double density will be more like \$575. (And you all thought that we were about to see a price war on disk drives!) Expect some very important announcements from Atari at the Summer Consumer Electronics Show. (Will it be the Atari 800XL with 6502 and 68000 microprocessors and 128K of memory?)

The latest Softline magazine contains the results of a poll that lists a reader's poll of the 10 BEST and 10 WORST Atari programs. In order, the BEST list contained Star Raiders, Jawbreaker, PacMan, Choplifter, Defender, Frogger, Shamus, Missile Command, Centipede and Visicalc. The WORST list was made up of Rear Guard, Kayos, Protector II, Andromeda, Alien Hell, Asteroids, Chicken, B-1 Bomber, Shadowhawk One and Invasion Orion. I respectfully decline to comment on either list under the grounds that my answers might.....

Austin Franklin, Austin Franklin, where are you? A noshov in March became a noshov in April also. This time the problem was problems with the printed circuit artwork. I am becoming a little annoyed with the litany of excuses and hope that the final unveiling of the product justifies the hoopla that has arisen. My previous comments on this 80 column board have stirred up a lot of interest in many other Atari groups. Stay tuned to this channel for further reports..... film at 11....

Congratulations to Rich Rospond for organizing and running a very impressive April meeting, even to the extent of working around the absence of Austin Franklin. By golly, we seem to be working our way to a very comfortable format for

our monthly get togethers. Kudos also to Rick Olson for taking the roles of both Treasurer and Secretary at the April meeting (in the absence of Ed Picciuti). And while I'm at it, hooray to Don Ursem and all the other library helpers for finally turning the library into a contributor to the treasury.

I found Chris Ahlers presentation at the April meeting on servicing Atari computers and peripherals to be very informative. He is one guy who I'd like to see come back again from time to time to pick up the discussion.

And wasn't that one page article on maze addicts in the April ANTIC truly awesome? Toot. Toot. Toot. (That's the sound of someone blowing his own horn.)

Let's begin a massive campaign of writing to Atari, not to complain, but to present some good suggestions on how to work themselves out of the crazy corner they seem to be backing themselves into. After all, like it or not, their success helps all us user groups and our suggestions can help them (if they will only listen).

One last comment. Tune up your computers, get those word processors going, and write up something for our newsletter. We are big and we are good and we have the talent to keep this newsletter among the best. But only if we get many more contributions.

See you in May.

Dick Kushner-JACG President

J A C G Newsletter Advertisements *****

The Jersey Atari Computer Group Newsletter will accept advertising on a first-come and space-available basis. Camera ready copy, accompanied by payment, must reach the Editor by the 20th day of the month preceding publication. JACG reserves the right to make decisions concerning the placement of ads within the Newsletter.

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THE APRIL MEETING

April brought showers (what else!) and another nearly full house of about 350 members. We began this very well paced meeting with some news from our president, Dick Kushner (who had just returned from Awesome Utah's National Parks). This was followed by a very informative talk by Chris Ahlers of Dependable Parks in Chatham on Atari servicing. He told us of the 1500 authorized service centers across the country and praised Atari for this uncommon service. Most other brands require that you send your precious computer to Texas or California for servicing. He mentioned that many failures that he has to repair are due to physical damage, i.e., broken pins and connectors, etc. He stated that he will service modified equipment, but requested that you let him know what the modifications are when you bring an item in for servicing. Generally the servicing uses the substitution method to isolate the problem to a particular area and then works on down to the component level. Chris stressed that it is important to use high quality media (disks and tapes) to avoid damage to the heads. He noted that the mean time between failures for the disk drive head is 10,000 hours and that he has yet to see a head failure due to other than pure abuse. He discussed the value of an inexpensive metal-oxide varistor to protect equipment from voltage surges. He then went over his service charges and stressed that it was very important to carefully note the nature of the problem when bring equipment in for servicing in order to keep down repair costs. He favors using isopropyl alcohol for cleaning disk drive heads and stressed that abrasive head cleaning disks should only be used infrequently and their use discontinued of one pass doesn't fix the problem. Chris concluded by sailing about half a dozen frisbees (with Atari Service logos on them) out into the audience. It was a talk definitely worth hearing and we will invite Chris back from time to time to update us and cover other equipment.

We then moved into game reviews, with Art Leyenberger showing QIX (Atari) and Rich Rospond demoing Pharaoh's Curse (Synapse). Both demos were well done and well received. Next came a drawing for the game Stratos, won by Bob Zornetzer, who happened to be the last name on our membership list. The membership was up in arms at this apparently rigged drawing until several more passes through the random number routine showed really random numbers!

After a brief break, Alan Hartman then gave a very good demonstration of Visicalc. He led the audience through the development of several uses and very effectively displayed the capabilities of this powerful program.

We were quite disappointed at the absence of Austin Franklin (again) and his, by now, infamous 80 column board. We will patiently look forward to his appearance at our May meeting (fer sure to the max!!!).

Our membership stood at 360 before the meeting and by the end was fast approaching 400. Our treasury contains \$3600, with the library finally beginning to make a noticeable contribution to this amount.



JACG MEMBERSHIP

The Jersey Atari Computer Group (JACG) invites you to become a member. Dues are \$15.00 per year and entitle the member to 1) Receive the monthly newsletter and when you join, receive back issues of the newsletter as available; 2) Purchase programs from the group's extensive tape and disk librarys at special rates; 3) Join special interest groups or form new ones; 4) Benefit from the expertise and experience of other Atari computer users; 5) Participate in group purchases of software at substantially reduced prices; 6) Receive a membership card that entitles the member to discounts at local computer stores; 7) Attend monthly meetings to learn about the latest hardware and software, rumors, and techniques for getting the most out of your Atari computer; 8) Submit articles and programs to the newsletter and give demos and presentations at the monthly meetings; 9) Participate in sale/swap activities with other members; and 10) Have a lot of fun.

If all of this sounds good then send a check or money order, payable to JACG, to:

Rick Olson
5 Starling Drive
Randolph, NJ 07869

Remember, receiving the JACG Newsletter is just one of the many benefits of being a member of JACG.

Editor's Desk

them in AUGUST.

In the "That's Incredible!" department, this issue has once again scooped the major rags and the Underground Press. The first review of the new database program, *File-Fax* to appear anywhere in print will be found in these pages. Also, the first review of the new word processor, *The Bank Street Writer* is contained herein. An impressive construction article by Ben Eng rounds out this issue.

Next, I would like to briefly tell you a true story that could be subtitled "Whatever Happened to the American Way?" About a month ago I visited a new retail computer store, introduced myself and arranged to have our Newsletters sold there. I also discussed Newsletter advertising and spent about an hour advising one of the owners on the good, bad and indifferent software for the ATARI computer. The person I spoke with, one of three partners, seemed excited about reaching Atari users through advertising in our Newsletter and was eager to help us reach additional users by selling the Newsletter. I was glad to have our Newsletter available to users in an area that we had not yet penetrated and welcomed the prospect of additional advertising revenue to help defray the cost of Newsletter production.

When I returned the following month to the retailer in question to pick up the old and drop off the new issues, I was told that the retailer did not want to sell the Newsletter anymore because the ads offered prices lower than what they were willing to offer. This is the second time that this has happened since I have been Editor of the JACG Newsletter.

Why do I take up valuable space to recount this incident? Because I feel that the user group-retailer relationship is a two-way street. Computer stores can help us broaden our base and therefore better serve our members. We can help retailers by providing them with a targeted market of close to 600 ATARI computer users. The retailer prospers when we patronize their businesses.

I am not suggesting that I or JACG should tell a retailer what to do. I firmly believe that any retailer is free to make their own business decisions. However, I grew up believing, and still do, that competition is the foundation of free enterprise. I am disheartened to know that some retailers selling products for the Atari computer are not willing to compete and provide better prices for our members.

Alternatives are available. Some stores offer normal retail prices and provide a discount for JACG members. Other stores run monthly specials. Still other stores offer a sliding discount: the more you buy, the larger the discount. By deciding not to sell our Newsletters this store is admitting that: 1) they do not want to cooperate; 2) they are greedy; and 3) they don't care about helping out the ATARI user (their customer) by providing useful, timely information in the form of

our Newsletter. It is interesting, though, that both retail computer stores who will not sell our Newsletter are located in shopping malls.

My advice to JACG members: PATRONIZE THE BUSINESSES WHO ADVERTISE IN OUR NEWSLETTER or who sell our Newsletter. You will be getting the best prices and service and thanking those retailers for supporting JACG and the ATARI computer.

I will conclude this month's mega-page editorial by mentioning an issue that frequent readers of this column are already familiar with. That is, support from Atari, Inc. I have previously expounded on the fact that Atari seems to be doing almost everything corporately possible to discourage loyal users and potential users of ATARI computers (see "From the Editors desk" in the March 1983 JACG Newsletter for a particularly inflammatory tirade). I am not alone in my criticism. The Underground Atari press (other user group Newsletters) is voicing similar (and usually more vocal) concerns. BUT NOBODY HAS DONE ANYTHING ABOUT IT. Well, now is your chance.

Listed below is the name and address of where you can send comments concerning Atari hardware, software and (non) support. I encourage all members of JACG to put your feeling in writing and send them in. Let Atari know what features you would have liked to see in the 1200XL computer. Let Atari know what programs you would like to have and are WILLING TO BUY. Do you want 80-column capability? Let them know. Would you prefer

non-shifted cursor control keys? Tell them. What do you like about the 800? What do you like about the 400? Let Atari know how YOU think they should support the Jersey ATARI Computer Group and other user groups. Let them KNOW!

Atari is apparently (finally) ready to listen. I encourage all other user groups to recommend that their members write to Atari. (Those of you old enough, may remember how STAR TREK was brought back for a third TV season in the late 60's because of a large letter writing campaign). Perhaps if we speak in unison, with intelligent and well-reasoned suggestions, Atari will hear us and change their ways. Atari did it right the first time with the 800. Let's all help them do it right again. Look for John Anderson's column, "Outpost: Atari" in the June issue of *Creative Computing Magazine* for more details concerning Atari's new attitude.

On a more down-to-earth topic: With the change in type size of the Newsletter, I now require paper copy to have 4-1/4 in. column width rather than 4-3/4 in. For specific details, see the "Writing for the JACG Newsletter" column elsewhere in this issue. Also, don't forget the special ALL GAMES ISSUE, slated for June and the Special Programming Issue coming in August. Get those game reviews and game-related material as well as programming material to me soon.

Continued on Next Page

Editor's Desk

I have covered a lot of important business this month so until the Special June Games issue, do all of your computing in New Jersey.

Arthur Leyenberger, Editor
JACG Newsletter

SEND ALL ATARI CORRESPONDENCE TO:

Mr. Raymond Kassar
President
Atari, Inc.
1265 Borregas Ave.
Sunnyvale, CA 94086

POKIN' AROUND

By
Jay Bloom - JACG

Hi again and welcome back to POKIN' AROUND. Here at POKIN' AROUND we let our fellow users in on some of the nicer poke locations. I hope you enjoy this month's column. This month I will attempt to explain how to protect a program written in Atari Basic. Strange as it may seem, Atari has provided us with a way of doing this.

To start off with, did you ever run a program and try to stop it while it's being executed and no matter what it just will not stop? Well now you too can make your program perform just like it was written by one of the pros! This is done with a small one liner.

```
10 IRQEN=PEEK(16)-128: IF IRQEN>=0 THEN  
POKE 16,IRQEN: POKE 53774,IRQEN.
```

If you do this at the beginning of your program, the break key will no longer function.

The one problem with the method I described above is that the system reset key will stop the program. Well, I have a solution for that too. All you have to do is modify the line 10 I described above by adding: POKE 580,1. Now you don't have a problem in the world, right? WRONG!! What would happen if someone were to load the program into memory without running it. Well I'll tell you what would happen. All they would have to do is type the simple and omnifamous word 'LIST'. That presented a problem until I was informed by a distinguished member of our group about an article that appeared in COMPUTE MAGAZINE which stated that if you wrote a program and entered the following line as the last chronological line, your program would be saved as a run only file. This means that when a person loads your program, it will cause a keyboard lockup. If the program is run though, it will function normally. This line is as follows:

```
32676 POKE PEEK(138)+256 *PEEK(139)+2,0:  
SAVE"D:(YOUR FILE NAME).
```

I know you're asking why it is line 32676. Well, this line has to be the last line because if it were in the middle, it would foul up the program in process. After you type in that line, you type 'GOTO 32676' in the immediate command mode (right after ready appears). This causes the program to be unlistable. Remember unlistable, not uncopyable. Also remember that once you do this you cannot get to your program to fix or modify it so keep an unlocked copy somewhere just in case you decide that you're not finished.


Well that's all for this month. I would appreciate any comments or ideas for this column. Please send me your magazine clippings or any programs demonstrating useful poke locations.

See ya next month.

Jay

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1983 MEETING SCHEDULE

All meetings are held on the second Saturday of each month in the Bell Labs Auditorium, Murray Hill, New Jersey. The meetings begin promptly at 10:00 a.m. and finish about noon. Dealer sales are permitted from 9:15 to 10:00 in the lobby, a general question and answer session occurs from 9:30 to 10:00, and a member sale/swap session takes place from 9:30 to 10:00 in the lobby (original software only).

May 14, 1983
June 11, 1983
July 9, 1983
Aug. 13, 1983
Sept. 10, 1983
Oct. 8, 1983

FILE-FAX By TMQ Software

Reviewed By
Arthur Leyenberger - JACG

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File-Fax is a machine language database program. It uses an 8-level sort, the documentation is excellent, on-line help screens are available and the program is easy to use. It is a database management system that will have you "up and running" in a short amount of time.

The *File-Fax* package includes memory-resident (the entire program fits in the computer memory at once), machine language database and report generating programs and a set of documentation consisting of a tutorial, reference manual, glossary, Atari information and quick reference card.

File-Fax is a visually-oriented database system. This means that you create your form (up to 31 fields) on the screen using a built-in editor and each record occupies one screen page. Once the form is created, data may be entered, modified or deleted by means of menu options. On-line help screens are available at any time (by pressing the ATARI key) to provide information on specific commands or editing functions. Each database application requires 1 disk for storage and may contain up to four report specifications (formats). However, a single database file may span several disk drives if additional space is needed.

Several interesting and useful features make *File-Fax* stand out from other database programs for the ATARI computer. One feature that is especially useful is the ability to search for a record or records based upon a range of criteria. A two-screen approach is used by the program where one screen represents the lower boundary and the other screen represents the upper boundary. By not specifying a criterion for one of the boundaries, that boundary then becomes open-ended. "Greater than" and "less

than" queries can thus be created to match all or any part of a field.

The built-in report generator has a unique capability. The 40-column Atari screen is unable to display the entire 80- or 132-column printed report format. To compensate for this, the screen will scroll from the center to allow access to column numbers greater than the screen size. The number of columns specified in the system characteristics (an option available from the main menu to define system characteristics) will determine the number of columns available for use on the screen.

Special character and field attributes are available to be used within a form. The characters within a field may be defined as alphabetic characters, Y/N (yes or no characters), blanks, a plus or minus sign, a decimal point and the digits 0-9. Fields may be defined as valid numbers, dollars and cents, and may be left or right justified automatically.

To summarize, *File-Fax* is the easiest to use database program available for the ATARI computer today. The help screens are a good idea and well implemented. The documentation is excellent. The tutorial section is thorough yet easily understood and good screen facsimiles are presented throughout the manual. Good use is made of the Atari keyboard for commands and special functions.

The program currently lacks calculated fields, global updates, database reformatting and multi-level field subtotals, but still is fast and powerful. It is especially well-suited for the first time or casual database user. It is well supported by the manufacturer and versions are available for just about any microcomputer.

A soon to be available utility program will offer the ability to 1) recover deleted records and report formats; 2) write reports to disk in DOS or DIF format for use with other programs like word processors and spreadsheets; and 3) execute an even faster 8-level sort than the one currently used.

File-Fax requires 48k RAM, at least one disk drive and retails for \$129.95. TMQ welcomes inquiries at: 82 Fox Hill Drive, Buffalo Grove, IL 60090. The phone number is (312) 520-4440.

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TRADING POST

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Trading Post is a monthly column that allows JACG members to list items for sale or swap. There is no charge for this service, and material must reach me by the 20th of the month.

For Sale: Official Atari windbreaker jackets. 1 small and 1 medium, will sell for my cost - 15.00 each. Also, ValFORTH player/missile graphics and character/sound editors from valpar. Cost \$39.95 new, will sell for only \$20.00; APX programs: , BLIS (BASIC program lister), XREF (BASIC cross reference utility), INSOMNIA (sound editor), and T: (text display device) -- \$10.00 each; Iridis 2 Tutorial (cassette) - \$5.00; SCES Player Piano (cassette) - \$5.00; Swifty Programming Aids - \$5.00; Electronic Games magazines - issues 1-8 : \$1.50 each or \$10.00 for all eight. Contact: Art Leyenberger, (201) 386-4254 (days).

For Sale: Mosaic 32K RAM board - \$50.00. Also, converted 48K board - \$120.00 (neg.). Contact: Frank Pazel at 627-8845 (after 4pm).

The JACG Newsletter seeks hardware and software reviews, tutorial articles, programs and any other information of interest to Atari computer users. Material should be sent to the Editor (see back page of this Newsletter for address) and conform to one of the following formats:

1) LJK Letter Perfect files on disk, 2) Text Wizard files on disk, 3) 4-1/4 inch column, single-spaced, dark black ink, right justified, no printing on perforation and pica font (10 cpi) hard copy, 4) AtariWriter files on disk, 5) Bank Street Writer files on disk, 5) BASIC REM statements on disk, and 6) BASIC REM statements on tape. Anything else will not be accepted, especially hand written or non-justified type written. Figures should be in black ink and camera ready. Programs should be submitted on disk accompanied by a listing. If the program does not work as indicated, it will be returned.

The above format options are numbered from 1 through 6. The *lower* the number of the option you choose in submitting items for the JACG Newsletter, the *better* the Editor will like you and the *sooner* the item will appear in the Newsletter.

The Editor reserves the right to make changes, accept or reject submitted material.

CONGRATULATIONS

One of our younger members, Scott Brause of Edison, has developed an educational program- MATH TREE, which is being distributed by Single Source Solution of Pleasant Hill, Ca.

Scott originally wrote this program in BASIC, then rewrote it in assembler for the ATARI 400 and 800 using 24K in tape and 40 K in diskette.

This current version is intended for children ages 6-12, and contains 10 different levels of difficulty in addition, subtraction and multiplication. Even a pre-schooler can start at level 1, and using the joystick, can perform simple addition. The user picks one of 4 answers, choosing the correct one by positioning the cursor with the joystick. Some colorful graphics help keep the youngster interested.

Scott will be demonstrating his program at the May meeting.

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WE'LL BE ABLE TO SAVE ON ATARI AND ALL OTHER SOFTWARE INCLUDING VISACALC, FILEMANAGER 800+, DATAPERFECT, ETC PRODUCTS LIKE BIT-3 (80 COL) FOR LESS THEN \$200

IT'S TIME WE USED OUR ECONOMIC POWER FOR OUR BENEFIT AND MADE OUR DOLLARS WORK HARDER.

The Bank Street Writer
By Broderbund Software

Reviewed by
Arthur Leyenberger - JACG

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Every time you turn around there seems to be still another word processor for the ATARI computer. Recently, Broderbund Software has joined the fray with the release of a new word processor called *The Bank Street Writer*. It is billed as, "The Home Word Processor." Although this product will address the needs of a specific group of ATARI computer owners, I believe that it is not as good a product as it could have been.

The *Bank Street Writer* is easy to use, intended for the non-technical user and is free of bugs. Also, it is geared for a particular market: The Home User. At first glance, the *Bank Street Writer* (BSW) looks like a powerful and easy to use piece of software.

One major use of a word processor in the home is to write letters. The BSW allows top, bottom, left and right margins to be specified either just prior to printing or permanently with its utility program. Automatic paragraph indenting is accomplished by simultaneously pressing the CONTROL key and the letter "I". Page ejects may be viewed before printing and adjusted as necessary. Most of the features that a home user would require to write letters are available. Some of the desirable letter-writing features not present are: underlined text, right justification and block right capability.

The other major use of a home word processor is to prepare reports and term papers by students. In addition to the features needed to write letters, the following capabilities are required: the ability to center text for making titles; page numbering and page headers (a one-liner that appears at the top of every page of the document except the first page) are useful features for more lengthy documents; and finally, editing the text once it is written should be easy to perform and the program should prevent the user from making errors. So far, the BSW has all of these capabilities.

One of the strongest features of the BSW is its editing functions. For example, if the user desires to erase a block of text, the ERASE option of the main menu is selected. Then the cursor is sequentially positioned at the beginning and at the end of the block of text to be erased. Next, the computer highlights (with inverse video) the text in question and prompts, "Are you sure you want to erase the highlighted text?" If the user answers yes the text is removed. Any other response from the keyboard is taken as a "No". Should the user suddenly realize that they did not want to erase the block of text after the text was

removed, all is not lost. The UNERASE option of the main menu is selected and the missing text is returned.

The MOVE and MOVEBACK commands allow the user to shift blocks of text (up to 15 lines at a time) back and forth as a unit within the document. The same highlighting and query messages that appear with ERASE and UNERASE are used. Both the UNERASE and MOVEBACK commands only work on the last block of text accessed. Previously moved or erased text is simply a memory.

Some additional features, like footnoting, are not possible since there is no method for passing printer control codes to the printer from within the body of the text. This means that alternate type fonts such as bold face, italics or condensed printing can not be selected (assuming your printer has these capabilities). The only printer codes that are user selectable are the line feed/carriage return and form feed codes.

The tutorial provided with the *Bank Street Writer* makes it unique among the currently available word processors for the ATARI computer. Unlike the word processor program itself which is written in BASIC A+ (by Optimized Systems Software), the tutorial (which is on the flip side of the main disk) requires the Atari BASIC cartridge to be installed. The first section explains text entry, capital letters, the return key and the wrap around feature. Wraparound allows the user to continue typing past the end of the 38 character line while the computer moves the excess words forward to the next line.

The final portion of the tutorial program deals with the MOVE, MOVEBACK, ERASE and UNERASE functions. The tutorial is interactive in that it not only describes how a function works, but also requires the user to try it for themselves. In this way, the user gets hands on experience using the program. Unfortunately the tutorial does not cover the transfer functions (loading, saving, and printing documents). However, these are covered in the manual.

The *Bank Street Writer* uses a 38 character by 18 line screen. The maximum document size is approximately 2300 words (with the BASIC cartridge removed) which translates into roughly a 9 page document. Here is where a tragic flaw of the BSW becomes apparent. Since the program is written in BASIC it is not particularly fast. This is no problem when the document length is less than 3 pages. However, as the size of the document grows, the time it takes to switch from the "write" mode to the "edit" mode increases to an unacceptable amount of time. For example:

I began writing this review using the *Bank Street Writer* itself. After about five 18-line screens (about half of this review) it was taking from 4 to 7 seconds to scroll up one line! At one point I measured 17 seconds to go from the "write" mode to the main menu. It was at this

Continued on Page 10

point that I pulled the plug and switched to Letter Perfect (LJK Enterprises) to complete this review. My main complaint with this lengthy response time lies with its effect on the first time computer user. If a child's first exposure to using a computer for serious activities (like word processing) results in the perception that a program that is easy to use must also require a lengthy response time, then that child is being done a disservice.

The positive features of the BSW may be summarized by saying it is the easiest word processor program to use for the ATARI computer. It is inexpensive, there is good error protection, the manual is clearly written and well organized, and 2 copies of the program are provided. The negative aspects are its lack of features that a "Home User" would require. These include: no right justification, limited file size, incompatibility with the ATARI 1200XL computer, inability to pass printer codes to the printer and lengthy response times with documents greater than 3 pages long.

In conclusion, *The Bank Street Writer* is a moderately powerful word processor that is extremely easy to use. Commands are simple and straightforward, a tutorial is provided and a backup disk is included at no extra charge. The Bank Street Writer is most suitable as a child's first word processor or for someone not requiring extensive features. Someone writing lengthy documents or who wants additional features (like right justification, multiple printer fonts and footnote capability) should look elsewhere, perhaps at the new ATARIwriter word processor.

It is a shame that such a well intended piece of software fails to hit the mark. The *Bank Street Writer* has almost everything going for it -- as far as it goes. Unfortunately, it does not go far enough.

Everyone that I talked to seemed to agree, the April meeting was one of the best that we have ever had. The major change that I will continue is to limit the amount of time for each speaker. This will not allow in depth analysis of any one topic, but will allow more reviews, and forces the speakers to concentrate on the meat, not the leftovers. I feel that the members can then obtain more information on things that look interesting.

I will also continue with a break after the main program, usually around 11:30, to be followed by a demo or topic that will need more time, such as April's VISI-CALC demo. Please look for the meeting's agenda which will be posted at several places in the lobby, along with the time allocated to each topic.

Chris Ahlers of Dependable Parts in Chatham has agreed to become a semi-regular at the meetings, is willing to answer your questions if you see him at the meetings. We will try to keep you up to date on recalls, modifications, etc.

For May's meeting I have already scheduled Facemaker, Paint, Spelling Genie and Math Tree which was written by one of our members- Scott Brause. I expect to add another 2 demos. After the break, John Anderson of Creative Computing will address us on what he sees as bad Marketing moves on the part of ATARI. If there really is an Austin Franklin, he might show up next month also.

The June meeting will run in conjunction with the Newsletter's topic of GAMES. I am looking for 6 demos, and would like to see some of our younger members volunteer. I sometimes wonder if anyone over 20 really understands some of the games anyway.

Several members have asked me about my statement regarding volume purchases. My point was that any member who needs to buy hardware or software, might want to ask his local dealer about a discount if he can get 5 or 10 members together for a group purchase. The dealers can not stock an unlimited inventory, and they could get a volume discount which they would pass along to you. In no way is the JACG in the business of soliciting group purchases, but the group would be the forum for any member who wishes to initiate such a purchase, either at the meeting- or through the newsletter.

Finally, I thought that we might want to start a Computer's Anonymous group for those poor souls who can't stop buying every new offering that comes on the market. Perhaps we could give them priority access to the bulletin board where they could have someone to leave messages with during their most trying moments.

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Richard Rospond 635-2936

TIPS and HELP

By Larry Ficks

This is a trial column. I have thought for sometime there needed to be a clearing house for people to publish helpful hints and ask questions. Kind of a cross between Ann Landers and Heloise Hints. I would include such things as:

1. Little things that you have learned from using a program that do not appear in the documentation. Maybe its something that drove you nuts; or the solution came from a long time user, the manufacturer, or was stumbled on by just dumb luck. These are the things that will not fill up an article but should be shared with others.

2. Questions whose answers seem to elude the finist efforts of Sherlock Holmes

I by no means will be able to answer the questions but I can act as a clearing house to get the question aired and when I get an answer print it for all to see.

Is there any interest?

The following are two examples of HINTS

1. The factory recommended dip switch settings for the C.I.TOH 8510 Printer are:

SW1 - 2,6,7,8 closed
SW2 - 1,7 closed

2. When using *Letter Perfect* the cryptic comment returned after you press **D** (during program setup) that says "Insert Disk, Press #:" means insert a Letter Perfect formatted disk with the print driver information on it. For instructions on using the print driver see, "De Re Letter Perfect, Almost", by Arthur Leyenberger. JACG Newsletter V2N6P5, Feb. 1983.

As for the questions:

1. When sending a file to UNIX how do you get UNIX to accept it. I always get back file not found even if I open one before I send.

OK. there are the examples, If I get a response I'll put them together and provide a column next month - if not another good idea bites the dust. Send the notes to me, Larry Ficks 17-6143F2 295 N. Maple Ave., Basking Ridge, N.J. 07920.

A note in closing; An old programmer passed on to me the following rules for home computer owners:

1. If you don't have a sense of humor you shouldn't own one.

2. If there are four ways to do something only one of which will not work you will invariably pick that one.

3. When all else fails read the documentation.

4. If things still do not work refer to rule 1.

```
*****
*           Other Atari BBBs           *
*           From A.R.C.A.D.E. BB       *
*           313-978-8087                *
*           Updated on 3/15/83          *
*                                     *
* Notes:                               *
* L= Limited Evenings & Weekends      *
* R= Ring-Back Call, Call Back        *
* #= Original of this format          *
* *= 24 hour operation                 *
*                                     *
*****
```

ST	AC-NUMBER	TYPE	NAME	NOTE
CA	213-366-2125	AMIS	T.A.B.B.S	*
CA	213-783-8373	AMIS	W.V.A.U.G	*
CA	408-253-5216	AMIS	GFX	*
CA	408-298-6930	AMIS	IBBS	L
CA	408-942-6975	AMIS	TEAM	L
CA	415-527-8276	ARMU	SYNAPSE	L
CA	916-484-2306	AMIS	S.A.C.S BBS	*
CO	303-221-1779	TARI	POOR RICHARD	L
CO	303-758-6233	AMIS	DENVER	L
DC	202-276-8342	ARMU	WASHINGTON	**
FL	305-238-1231	AMIS	AMIS APOGEE	RL
FL	813-577-0048	AMIS	ST PETE	?
GA	404-252-9438	ATAB	ROD R	#
IL	312-789-3610	AMIS	CHICAGO	*
MA	617-595-0211	AMIS	NO SHORE	*
MA	617-667-7388	AMIS	MACRO EXCHG	*
MA	617-937-1970	AMIS	ALPHA CTRL	?
MD	301-544-2460	TARI	SEVERNA PARK	?
MD	301-587-2132	ARMU	COMPUTER AGE	L
MD	301-871-5370	?	RICKY MOOSE	?
MI	313-274-3940	AMIS	M.A.C.E.	*
MI	313-589-0996	AMIS	M.A.C.E.	**
MI	313-978-8087	AMIS	A.R.C.A.D.E	*
MI	616-241-1971	AMIS	G.R.A.S.S.	*
NJ	201-339-7407	AMIS	BAYONNE	*
NJ	609-267-7825	TARI	BOB ALLEGER	L#
NJ	609-924-5875	TARI	ELEC CANDY	L
NV	702-733-9488	AMIS	LAS VEGAS	L
OH	216-582-2797	TARI	BCHWD FLS	?
OH	419-423-0206	AMIS	FLAGCITY	*
OK	405-681-6929	AMIS	TEBBTOWI	?
OK	405-685-2027	AMIS	SW SAFARIS	L
OK	405-722-5056	ARMU	GREKELOM	?
OR	503-343-4352	ARMU	A.C.E.	?
PA	215-250-9471	AMIS	AMIS CARNIVAL	*
PA	215-432-9848	AMIS	STARCADE	*
PA	412-655-2652	ARMU	PAGE	?
TX	817-589-1254	ARMU	ACUDG	*
WA	206-525-3412	AMIS	SPACE	L
WA	509-582-5217	AMIS	A2-D2	L
WI	414-352-2772	AMIS	MIL-ITARI	*
WI	608-251-8538	AMIS	MGIC LANTERN	*

ATARI MEMORY MODIFICATIONS

By Benjamin Eng - JACG

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This is a construction article for the advanced computer enthusiast who is familiar with the ATARI's internal hardware as well as the software. This article will show you how to increase the ATARI 800's maximum addressable RAM from 48K to 52K. Instructions will also be given for converting the ROM Operating System to EPROMs that could be reprogrammed for a customized or "Hot Rod" system.

The ATARI 800's 6502B microprocessor has a 16 bit address bus that is capable of directly addressing 64K bytes (really, 65,536 bytes) of memory. This memory is a combination of READ ONLY MEMORY (ROM), RANDOM ACCESS MEMORY (RAM) and INPUT/OUTPUT PORTS (I/O). The ROM, also known as the Operating System, contains 6502 machine code for such routine chores as screen editing and is non-volatile. The RAM is used for temporary storage of data and applications software like games and BASIC programs. Figure 1 shows a memory map of the ATARI 800's addressing space. As shown in the map, the computer is configured for a maximum RAM expansion to 48K bytes from 0000 to BFFF (hexidecimal). The Operating System and hardware I/O ports occupies the upper 12K portion. C000 thru CFFF is reserved for future Operating System expansion (the ATARI 1200 for instance) and is unuseable because neither RAM or ROM is present. This seems rather unfortunate in not letting the CPU use all the memory it is capable of addressing. Assembly language programmers can appreciate having at their disposal, an extra 4096 bytes of memory. A lot of machine language subroutines can safely be stuffed into this unused 4K block instead of the 256 bytes known as Page Six.

When ATARI introduced the 800 back in the late 70's, the only commercially available dynamic RAM chip that was feasible for a low cost home computer was the 4116 (generic name). This chip has a 16K by 1 bit storage format and a set of 8 is required to form a 16K byte memory board. ATARI provided 4 slots in the chassis to accommodate the Operating System and up to 3 of the 16K RAM boards for memory expansion. Hence the 48K RAM limit. There are non-ATARI enterprises offering 32K memory boards that cram 16 of the 4116 chips unto a single board to combine the second and third 16K banks. Using this board leaves the last slot as a spare for other peripherals like an 80 column character board.

The memory chip market is a very competitive one where the introduction of newer and denser devices causes a downward trend on the prices of existing ones. The 4116 now has a bigger brother, the 4164 which has 4 times the capacity in a 64K X 1 bit format. The 4164 is easier to design with since it only requires a single +5 volt supply versus the +5,-5 and 12 volt levels required by the 4116. A set of 8 4164's consume less power than a set of 4116's which is a very important factor in the design of computer systems. The 4164 has already dropped low enough in price where it can be integrated into the next generation of affordable home computers such as the ATARI 1200 and the VIC 64.

The ATARI 800 can be upgraded with these new 64K chips to provide addressable RAM up to the 52K address boundary by modifying a 16K board. The pinouts are nearly identical with the older 4116's. However, this modification and the EPROM conversion does require extensive rewiring and should only be attempted by someone who has a good working knowledge of digital IC's, who is competent with a soldering iron and can understand a

ROM F	FFFF
Operating System	F000
ROM E	EFFF
Operating System	E000
Floating Point	DFFF
Hardware I/O	D800
Reserved for Expansion	CFFF
BK RAM Space or Left Cartridge	BFFF
BK RAM Space or Right Cartridge	9FFF
32K RAM Space	7FFF
	0000

MEMORY MAP

FIGURE 1

schematic. Also, the ability to troubleshoot and diagnose a problem is desirable to recover from a "it does not work!" situation. The novice who attempts these modifications will probably encounter problems. Since the artwork for the 800's P.C. boards may have gone through several revisions, exact trace locations could not be givened. Needless to say, an attempt should not be made to modify a machine that is still under warranty. The modifications will affect the following areas:

a) installation of jumpers to the underside of the motherboard. This will require disassembly of the computer. There is an excellent article entitled "Anatomy of an ATARI" complete with photographs by Richard Herring in the April issue of ANTIC. The schematics in the "ATARI Technical User's Notes" will also be useful.

b) cuts and jumpers plus the addition of two logic IC's to an existing 16K memory board.

c) if the 4K address space starting at C000 is to be made available as RAM, a slight modification to the Operating System is required. Otherwise, the computer will not boot up properly unless a cartridge is inserted (this will be explained later). Therefore, the ROM chips on the Operating System board must be replaced with EPROMs reprogrammed with the appropriate patches to the operating system. Another IC chip will have to be added. Access to EPROM burning equipment is necessary. If this equipment is not available, the RAM board can still be adapted for 4164's with as a 48K system. This will still leave you with two chassis slots for peripheral expansion.

d) your sanity if the modifications do not work.

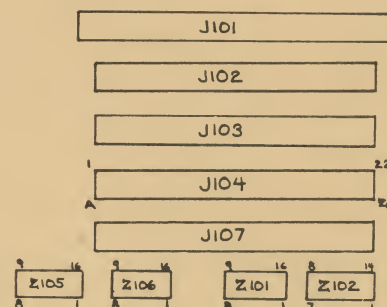
After reading the previous paragraphs, you may wonder, "Why do I want to do this?" Well, the advantages to be gained are:

1) two available slots for expansion and peripherals.

2) lower power consumption on the +5 volt supply. This will help minimize RF interference and provide clearer TV screen clarity.

3) an additional 4K bytes of RAM starting at C000 with a slightly modified Operating System.

4) the flexibility of an EPROM Operating System to allow for future O.S. revisions through reprogramming. An Operating System customized to a programmer's preferences is possible (some examples will be givened later). A hardcopy of the disassembled O.S. code should be obtained.



MOTHERBOARD

FIGURE 2

If you feel the advantages outweigh the risks and that you are confident and competent enough to carry out the modifications, then proceed!

Before starting any work, study the accompanying schematics and the ones in the "Technical User's Notes." Familiarize yourself with the address architecture of the 800 computer.

Figure 2 shows the layout of the memory board connectors and several IC chip sockets as viewed from the underside of the motherboard. Figures 5 and 6 show the layout of a modified 16K RAM and O.S. board after modification. Note that on the component side of each board, the edge connector pins are numbered consecutively from 1 to 22 while on the rear, the pins are labeled A thru Z excluding G, I, O and Q. The 16 bit address bus is generated by the CPU board located at connector J101. The 4 most significant bits are decoded by the chip located at Z101(74LS42) to provide the memory bank selects for the left and right cartridge, the Operating System and each of the 16K boards. Incidentally, I have had problems where the memory would occasionally lose its data and cause a crash. I've isolated the cause to the 74LS42 decoder at the Z101 socket and replaced it with a 7442. The 7442 has a higher drive output and is faster than the 74LS42 device. The pinouts are identical so cuts and jumpers aren't necessary. If you have experienced a similar problem, I'd recommend installing this chip first, reassembling your computer and checking it out before proceeding. For reference, the memory address truth table is:

A15	A14	A13	A12
0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	1
0	1	0	0
0	1	0	1
0	1	1	0

Continued

0	1	1	1	
1	0	0	0	Right
1	0	0	1	Cartridge
1	0	1	0	Left
1	0	1	1	Cartridge
1	1	0	0	Not Used
1	1	0	1	I/O & F.P.
1	1	1	0	ROM E
1	1	1	1	ROM F

Figure 3 is a diagram of the circuitry that is added to a 16K RAM board. Address lines A15 and A14 are brought in from the edge connector, P1, to the address multiplexer circuit to provide column and row address information to the 64K chips. Three additional strobes are also wired in from the motherboard for enabling the RAM data bus. The 74LS02 and 74LS11 are logic gates that can be purchased from any RADIO SHACK store.

Figure 4 is a schematic of the ATARI Operating System ROM with the additional logic for EPROM operation. Only a single logic chip, a 74LS139, is needed to provide the chip selects. I used 2532s with 450 ns access times for the Operating System code and a 2716 for the Floating Point routines. It is possible to use two 2732s or even a single 2764 with some extra wiring changes.

RAM Board Modification:

Work in a static free area. You must be very careful when cutting P.C. traces so as not to cut adjacent ones. When soldering a wire to an edge connector pin, do not solder directly unto the edge pin itself but to a trace leading away from it. The edge pins are gold plated and solder would ruin them. The mounting holes for the board covers can be used to route wires from one side of the board to the other. Keep all jumper wires as short as possible and use epoxy glue to tack them down.

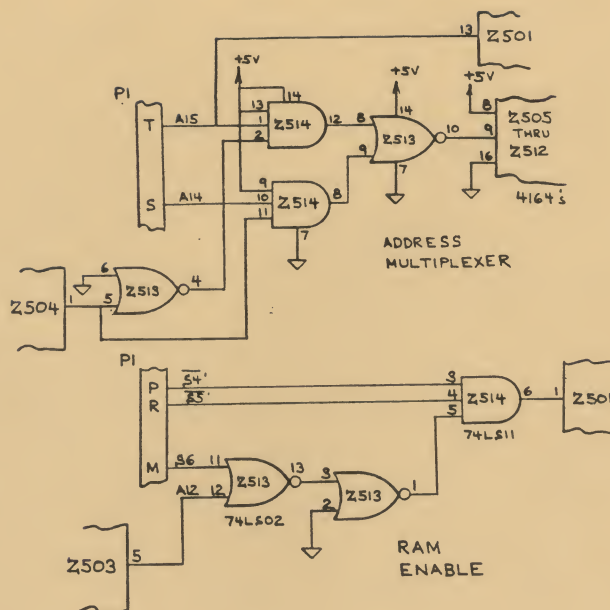
1) remove and discard the plastic and metal covers to the 16K RAM board.

2) remove all memory chips Z505 through Z512 from their sockets. They will be replaced with 4164s (or equivalents).

3) remove capacitors C503, C505, C507, C509, C511, C513, C515, C517, C518, C521 and C522. They are the ones mounted along the top of the board.

4) cut the P.C. runs going to pins 1 and 13 of Z501 as close as possible to the socket with an X-acto knife. Wires will be soldered to these pins later.

5) cut the runs coming from pin 20 and X of the edge connector on both sides of the board. This is the -5V input and is no longer needed.



64K DRAM
CONVERSION CIRCUITRY

FIGURE 3

6) cut the runs coming from pins 21 and Y on both sides of the edge connector. This is the +12V input to pin 8 of the 4116 memory chips. The P.C. trace will later be used to supply the +5V power to the new memory chips so be sure to leave the daisy chain intact.

7) locate the daisy chain connecting pin 9 of each of the memory chips. This run supplies the +5V power to the 4116s. Separate this chain from the +5V buss that supplies power to the other logic chips. The chain that connects pin 9 of each of the memory chips will later be used to provide column and row address A7 to the 4164s.

8) on the edge connector, cut the P.C. runs connecting pins M & N, P & R and S & T. These are the "loopback traces that enable the other expansion slots. These pins will be used to provide the additional address lines and bank select strobes from the motherboard.

Glue a 74LS02 and 74LS11 "Dead Bug" style onto the board as shown in figure 5. They are to be designated Z513 and Z514 respectively. Use 30 gauge teflon coated jumper wire to make the following connections:

- 1) connect edge connector pin T to Z501-13 and Z514-1
- 2) connect edge connector pin S to Z514-10

Continued

either side of the board and underneath the sockets. Using an ohmmeter, check for broken continuity between pin 21 of each of the ROM sockets, pin 6 of Z401 and edge connector pin 12. However, there should be continuity from Z401-6 to P1-12 (edge connector). Reconnect this path if you have broken it remembering to bypass pin 21 on each of the ROM sockets. Refer to the schematics in the "Technical User's Notes" for reference.

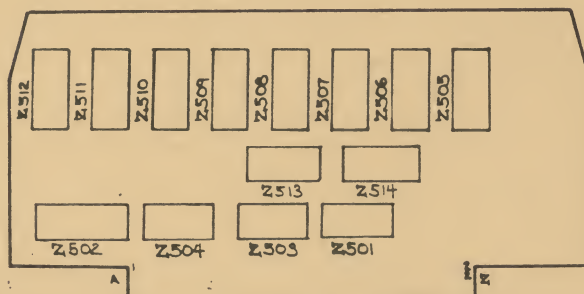
4) On each of the ROM sockets, break all connections to pin 20. Pin 20 of A401 and A403 should be isolated from each other and P1-H. A402-20 should be disconnected from P1-M. There should be continuity from P1-M to Z401-4. Reconnect this trace if it was cut.

5) Isolate pin 18 of A402 (floating point software) socket only. A402-18 should be isolated from the trace connecting P1-L, A403-18, A401-18 and Z401-5. P1-L, A403-18, A401-18 and Z401-5 should still be tied together. Reconnect this chain if it was broken.

6) Glue a 74LS139 chip "Dead Bug" style near the Z401 device and beneath the 3/16 inch hole that was drilled as shown in figure 6. This chip will be designated Z500.

When you have completed the necessary cuts, install the following jumpers.

From	To
A402-21	A402-24
A403-21	A403-24
A401-21	A401-24
A402-20	A402-12
Z500-16	Z401-16
Z500-8, Z500-13	Z401-8
Z500-1	Z401-4
Z500-2	Z401-5
Z500-3, Z500-14	Z401-6



64K MEMORY BOARD
FIGURE 5

Z500-15	P1-H
Z500-7	A402-18
Z500-12	A403-20
Z500-11	A401-20

For 52K RAM systems - install Z500-4 to Z402-2. You must have the 64K RAM board and a modified Operating System to read and write data from C000 to CFFF.

Cut off the excess pins from Z500.

As mentioned previously, a patch must be made to the Operating System for a 52K system. There is an initialization routine in the coldstart procedure that determines system RAM size in 4K chunks. This is done by writing and reading a word back to the first location of each block. The problem is that unless this routine is stopped before it reaches D000 (CTIA/GTIA address) the computer will not boot properly. This RAMSIZE check routine can be stopped at A000 when a cartridge is inserted but there are plenty of applications where the computer must be booted without a cartridge. Therefore, this procedure must be taken out and the RAM size set. For B revision ROMs, the patches are:

Location	From	To
F25C	10	A0
F271	10	20
F274	D0	EA
F275	E9	EA

For the older A revision ROMs, the patches are:

Location	From	To
F25A	10	A0
F27B	10	20
F27E	D0	EA
F27F	E3	EA

These patches are to be programmed into the "F" EPROM (F000-FFFF) in the A401 socket.

When you are finished with the modifications check over your wiring as you did with the RAM board. Install the programmed EPROMs and insert the O.S. board into the proper chassis slot with the components facing the rear of the computer. First boot up the computer without DOS or any cartridges inserted. If all goes well, the familiar "ATARI COMPUTER MEMO PAD" should appear. Next install the ATARI EDITOR/ASSEMBLER cartridge and restart the computer. When entering SIZE, the computer should respond with 9C1F as the upper memory limit. Go into the DEBUG mode and use D (display memory command) to examine C000 through CFFF. You should see an alternating pattern of 1's and 0's. The coldstart procedure does not clear this part of

Continued

memory and is relatively safe from the Operating System. Use the M (move memory) and V (verify memory) commands to exercise the RAM from C000 to CFFF until you are satisfied it is working properly. If all goes well, congratulations! If not, go over your wiring and check for traces that may have been cut inadvertently.

Now that you have an EPROM Operating System, you can customize the O.S. to suit your particular needs. Changes could easily be made by erasing the EPROMs with an ultraviolet lamp and reprogramming them. For example, the left margin default could be set to column 0 instead of 2 on powerup or a SYSTEM RESET. Change location F174 (A and B revision) from 02 to 00. The background color could be changed from blue to black by changing FEC3 (A and B revision) from 94 to 00. On a monitor, especially the green phosphor type, the characters would have a sharper contrast ratio. The ASCII byte string for the "ATARI COMPUTER MEMO PAD" message is located at F0F2 through F10C. It can also be changed to whatever you would like to appear in the blackboard mode.

Perhaps the best patch you can make is the one that speeds up the keyboard response by shortening the switch debounce routine. The following patches have to be made:

For B Revision ROMs:

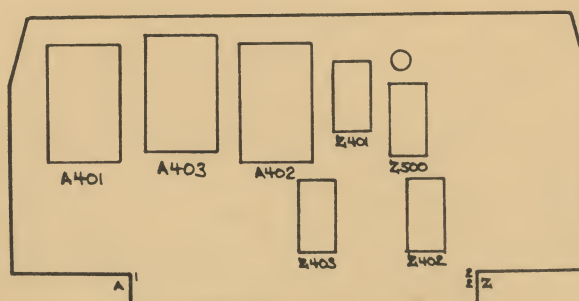
Location	From	To
E869	06	03
FFE3	03	01
FFEC	30	10

For A Revision ROMs:

Location	From	To
E88E	06	03
FFE3	03	01
FFEC	30	10

The faster keyboard response will become most apparent during cursor positioning.

The memory modifications that were given in this article should help start an ATARI 800 owner towards developing his own "Hot Rod" computer with a "Souped Up" Operating System and an expanded memory capacity. As mentioned earlier, it is recommended that a dump of the disassembled O.S. be made for examination. Also, COMPUTE publications has an excellent reference titled "Mapping the ATARI" which should be consulted. Now, if the the Operating System for the ATARI 1200.....



EPROM OPERATING
SYSTEM
FIGURE 6

SCREEN DUMP for GRAPHICS MODE 9

by Edward Schultz Jr.
From: Mace, Aug. 1982

This program will allow you to dump a graphics mode 9 or 11 screen to an Epson printer with GRAFTRAX-80 or GRAFTRAX-PLUS installed. The program needs to be appended to the end of the screen producing program. Graphics mode 9 on the ATARI (with GTIA) allows 16 intensities of any one color to be plotted on the screen in a 80(X) by 192(Y) matrix. The 'dots' that are plotted are rectangles that are four times as wide as they are high, or basically four graphics mode 8 'dots' next to each other horizontally. Similarly, graphics mode 11 'dots' are the same shape, but they are displayed as 16 distinct colors, all with the same intensity.

The problem that occurs in dumping these types of screens to a printer is in finding a way to represent 16 intensities or colors on a printer which only prints in black and white. The solution is to use a technique similar to what newspapers do for printing pictures. Black and white dots placed close to each other appear grey to the eye. By varying the ratio of black to white dots, varying shades of grey are obtained. To obtain 16 different shades of grey, 16 dot patterns are needed. this program uses a pattern of two rows of eight dots to obtain 16 dot patterns, and maintain the 1 by 4 size ratio of the graphics mode 9 and 11 'dot'.

The first line in the program listing dimensions room for the string which will hold the dot patterns for the 'grey scale', and for the buffer that will hold the data for the Epson. The next step is to insert a prefix into the line buffer for the Epson that tells the printer that the 384 bytes following should be printed as dot graphics characters. Line 1100 is where GREY\$ is initialized. Unfortunately, GREY\$ is almost all ATARI graphics characters, which don't print very well on a printer. GREY\$ must be created by entering the characters described in the following REM statements between the quotes in line 1100. For example, (INV\ESC\CTRL) means to press the ATARI ..

RS-232 TUTORIAL

Part 1

By Jon Tara

From (MACE), Aug 1982 Newsletter.

General Characteristics (DCE-DTE Distinction)

Every microcomputer user has had to tangle with RS-232 at one time or another, and it is usually not a pleasant experience. Even those of us with years of experience in the field get confused at times. This is the first of a short series of ITEMS intended to explain the basics of RS-232 interfaces, and some of the common "tricks" that can be played to make life easier when trying to get one RS-232 device to talk to another.

RS-232 is an Electronic Industries Association standard calling out electrical and operational characteristics for a serial interface between Data Terminal Equipment (i.e. Terminals) and Data Communications Equipment (i.e. Modems). Surprisingly, RS-232 does *not* call-out the TYPE of connector to be used, although it *does* call-out pin numbers. Fortunately, this has never been a problem. The de-facto standard connector for RS-232 is the DB-25 series of connectors. The standard calls for a female connector on DCE (modem) interfaces and a male connector on DTE (terminal) interfaces. Unfortunately, this is a poorly adhered-to aspect of the standard: many terminals use female connectors, even though they are wired with a DTE interface.

Now you may begin to smell something fishy here: what do you do when you want to connect something (a terminal or a modem) to a *computer*? Well, according to the standard, YOU DON'T.

Of course, it's done all the time, and this is where things get *really* confusing. A computer port may be set up to "look like" either a DTE (terminal) interface or DCE (modem) interface. Burn this into your brain right now:

"A DTE interface "looks like" a terminal"
"A DCE interface "looks like" a modem"

And oops, sorry perns, you've gotta match them up in pairs.

"A DTE cannot talk to another DTE" "A DCE cannot talk to another DCE"

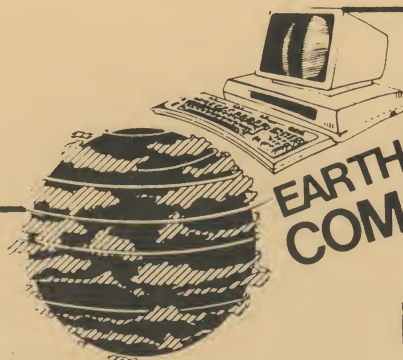
(There is a way around this, and I'll discuss it in another ITEM.)

So, before you plug an RS-232 device into your computer, you've got to decide what your computer "looks like". The connector situation is even more confusing with computer than with terminals. (I've found that you can hit it right 60% of the time by going AGAINST the standard...) The best bet is to check your computer manual. GENERALLY, though, mini and micro-computers will be set up as DCEs, so that they can talk to a terminal.

Screen Dump

key to get inverse characters, then press the ESC (escape) key then hold down the CTRL key and press the ; key, press the ATARI key again to get back to normal characters. There should only be enough characters to fill the space between the double quotes on line 1100. In the line 1160 the printer is opened for output, and in lines 1210-1220 three lines are skipped, and there the line size on the Epson is set to a line 8 dots high. Finally, in the main loop of the program, the screen is read in vertical stripes from top to bottom, with each screen dot converted to a double byte dot pattern according to its intensity. The program is entered by executing a GOSUB 1000 in the BASIC program which creates the graphics screen. The program may be renumbered to fit anywhere in your existing program, as long as the GOSUB which calls the program points to the first line of the screen dump program. To complete a screen dump it takes about 13 minutes.

```
1000 DIM GREY$(32),BUFFER$(400)
1020 REM TELL PRINTER NEXT384 BYTES
1030 REM ARE DOT PATTERNS
1040 REM ( 192X2=384)
1060 BUFFER$(1)=CHR$(27):BUFFER$(2)="K"
1080 BUFFER$(3)=CHR$(128):BUFFER$(4)=CHR$(1)
1100 GREY$=""
1110 REM GREY$="INV\ESC\CTRL > )(INV\ESC\CTRL L)(INV\CTRL ; )(INV _ )
1120 REM (INV\CTRL ; )(INV ^ )(INV N)(INV 7 )( )N)(INV ) )(F)
1130 REM (INV Y )( F )(INV X )( U )( $ )(INV\CTRL)( $ )(INV\CTRL Y )( $ )
1140 REM (INV\CTRL Q )(CTRL Q )( H )(CTRL D )( ) (CTRL D )(SPACE)(CTRL , )
1150 REM (CTRL P)(CTRL P)(CTRL , )(CTRL , )"
1160 OPEN #7,8,0,"P:"
1180 REM SET LINE WIDTH TO EIGHT DOTS
1190 REM AND SKIP THESE LINES
1210 PRINT #7:PRINT #7
1220 PRINT #7:CHR$(27);"A";CHR$(8)
1240 REM READ SCREEN IN VERTICAL STRIPES
1250 REM AND GENERATE BUFFER$
1270 FOR X=79 TO 0 STEP -1
1280 P=5:FOR Y=0 TO 191
1300 LOCATE X,Y,A:PTR=AX2+1
1320 BUFFER$(P,P+1)=GREY$(PTR,PTR+1)
1330 P=P+2
1340 NEXT Y
1350 PRINT #7;" " ;BUFFER$
1360 NEXT X
1370 CLOSE #7:RETURN
```

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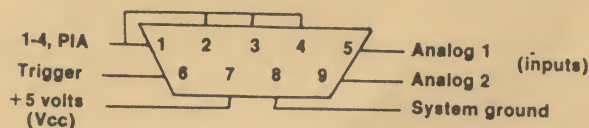
INTERFACING YOUR ATARI

By Marshall S. Dubin

Part 2: Controlling Power

Last month we looked at various ways of monitoring "real world" devices such as thermostats or light sensors using Atari's joystick ports. This month, we will look at ways to use the ports for output. This gives you a means to control a wide variety of external devices, relays, and the like.

As you can see from the pin diagram in the figure, the joystick port has several potential input sources available. For example, two of the pins are intended for use with the paddle controllers. These are called the ANALOG pins. They take an analog source such as a variable resistance and convert it into a digital signal. This is in essence how the paddles function. They provide a resistance via a potentiometer within the paddle unit, between the analog input pins and +5 volts DC. The computer interprets the variable voltage as a digital number between 0 and 228. This is called "on board" analog to digital conversion. Units performing a similar function may be purchased at a hefty price, but Atari owners have the use of 8 of these units built right in!



For now, let's concentrate on pins 1-4 on the joystick ports. These are the pins of the Peripheral Interface Adapter chip, more commonly referred to as the PIA. Basically the PIA provides a means of connecting your computer to peripherals. The PIA chip can be programmed for either input or output. There are two PIA ports of eight bits each available for your use. Joystick ports 1 and 2 compose PIA port A, while joystick ports 3 and 4 compose PIA port B. Each port is one byte (8 bits) and may be used together or individually to provide input and output functions. Some of these functions may be used to drive a printer or other accessory, or even a series of power relays which can control alarms, lights, appliances, motors or whatever.

p

The problem involved in controlling larger interface devices is basically a problem of taking a small amount of power and amplifying it. The ports on your computer are not made to power anything more than another chip. The manual recommends a maximum of 1 TTL load (1.6 ma.) for each PIA bit, and no more than 50 ma. at the +5V pin. If we are using relays or controlling power, we will need at least 12-24 volts.

There are several ways to accomplish this task. The figures below illustrate some of them. The most common arrangement is the transistor driver. In this arrangement the computer provides a very small voltage which turns on the transistors which in turn switch the load. A second way is through the use of opto-isolators. The computer provides 5 volts which switches the LED (light emitting diode) of the isolator on. When the diode is lit, this triggers a photo sensitive transistor which is connected to a larger load or a relay. A DARLINGTON transistor package can be used in a similar fashion. The low voltage fires the Darlington transistor which can then switch a considerably larger current. Finally there are integrated circuit interface chips such as the 7407 which allows a switching of up to 30 volts from the 5 volt TTL level of the Atari.

All of these methods will work, and actually which one to use will depend on the specific environment or task lined up for them. The method I prefer is the 7407 chip. It is inexpensive, will handle up to 30 volts, and has six gates, so that I may switch six devices from a single chip, and will handle about 30 ma which will drive most small relays or solid state switches.

The SN7407 made by Texas Instruments is an open collector device. To use it properly you must connect a 2.2K ohm resistor from each output to +5 volts. When an output is "on" the output is actually open - so the resistor supplies +5 to the device you are driving. You can drive up to 30 volts at the outputs (but you may have to tamper with the value of the resistor somewhat). When an output is "off", it is shorted to ground, and your device sees 0 volts (ground actually). The resistor limits this current to a fairly low value so you don't blow the power supply or worse, the chip! Since the resistor can't supply much current, make sure the resistor/7407 combination is seen as the

continued

"ground side" of your circuit, i.e. to drive a relay, connect +5 to one side of the relay, and the other side to the output of the 7407. Then, to turn the relay on, turn the 7407 OFF. Current will flow through the relay, and then through the 7407 to ground.

You can easily drive discrete LED's with this too (such as for test lights), as well as a variety of small relays or solid state switches. Just make sure you SINK the current i.e. one end of your driven device goes to +5 (through a resistor!) and the other end to the 7407. Sending a "0" (logic level low) to the PIA turns the device ON, and a "1" (logic level high) turns it OFF. If you want to do it the other way around, use the inverting 7406, which will turn your device ON with a high logic level and OFF with a low level. Recognize though that the default state of the PIA when the computer is powered up is all bits high. If you are using an inverting 7406, your devices would come alive when you powered on the Atari. This is why I prefer to use the 7407, since I can power up and then have my software drive the devices by writing a 0 to the bit I want to power a device from.

Speaking of bits, a few words are in order about the structure of the ports before you run off to warm up your soldering irons. The PIA as I mentioned earlier consists of two ports, port A and port B (or PORTA and PORTB for all you pneumonics phreaks). These are controlled through the use of the control registers for each port, PACTL and PBCTL. You may have heard of the PACTL because that's the one you poke with 52 to turn on the cassette player. The addresses are as follows:

PORTA 54016/\$D300 - port A address

PORTB 54017/\$D301 - port B address

PACTL 54018/\$D302 - port A control

PBCTL 54019/\$D303 - port B control

On power up, the ports are initialized to \$FFFF or all bits high. To use a port for input, just pull the bit of your choice low by connecting it to ground. To use the port for output, it first must be formatted for output. The procedure is not complex:

1. Poke the control register (PACTL or PBCTL) with 56/\$38 hex.

2. Now poke the port (PORTA or PORTB) with 255/\$FF hex. This specifies the port will be used for output.

3. Poke PACTL or PBCTL with 60/\$3C hex.

4. Now just poke the port (PORTA or PORTB) with your data.

Essentially you have a total of 16 bits to play with. Just remember that two joystick ports make up one PIA port. Stick 0 and 1 are the A side and stick 2 and 3 are side B. Each joystick port is 4 bits or 1 nybble. Each side of the PIA is 8 bits or 1 byte. When programming for output, you must remember that a specific BIT is driving a device. Therefore one joystick port can drive 4 devices (1 for each bit). An entire PIA side will handle 8 devices and if you use both A and B sides you can trigger 16 individual devices at once or in any combination. You must POKE into that port a decimal number whose BINARY representation will switch on a certain bit or series of bits. For example, if I POKED a 255 into port A, all bits would be on. If I POKED a 12 into port A, bits 3 and 4 only would be on. The individual joystick ports may be read using the shadow registers as follows:

Jack 1 (STICK 0) 632/\$278 hex

Jack 2 (STICK 1) 633/\$279 hex

Jack 3 (STICK 2) 634/\$27A hex

Jack 4 (STICK 3) 635/\$27B hex

You also can use the BASIC keywords STICK to access these ports eg. X=STICK(0), etc.

The program listing will provide you with a demonstration on how the ports are programmed. The program first allows you to select a port, and program it for either input or output. Then you can write data to the port and the computer will peek the port and verify the data you wrote. Granted this isn't elaborate, but it works. Next time we will delve into a useful construction project, and I'll provide a more sophisticated driver routine to monitor real world data. For now, get used to the functions of the PIA ports and the various drivers I have illustrated. Then prepare your soldering iron for action, and I'll see you next month! ☺

continued

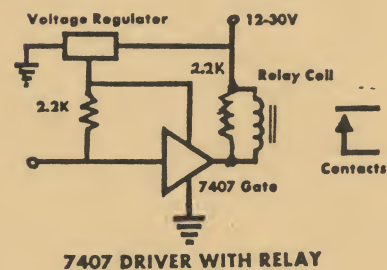
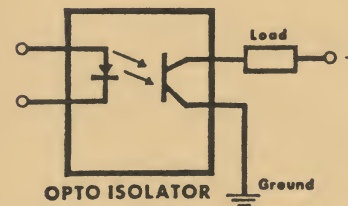
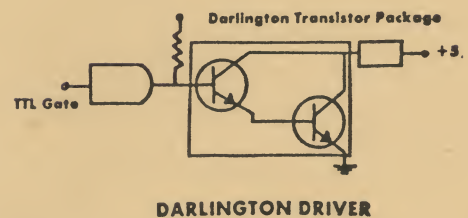
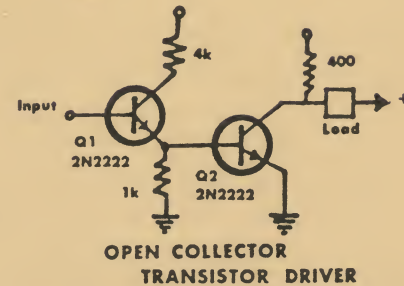

```

10 REM * PROGRAM TO FORMAT PIA PORTS
20 REM
30 GRAPHICS 0:POSITION 10,2
40 DIM IO$(10),DATA$(3)
50 PRINT "PIA PORT DEMO"
60 REM
70 REM PORT ADDRESS
80 REM
90 PORTA=54016:PORTB=54017
100 REM
110 REM * ROUTINE TO CONFIGURE PORT
120 REM
130 TRAP 130:PRINT :PRINT "Configure which
port (1-4) ";
140 INPUT PORT:IF PORT<1 OR PORT>4
THEN 130
150 REM
160 REM SELECT PORT CONTROL REGISTER
170 REM ADDRESS (PACTL,PBCTL)
180 REM
190 IF PORT<3 THEN
PCTL=54018:PORT=PORTA
200 IF PORT>2 THEN
PCTL=54019:PORT=PORTB
210 PRINT :PRINT
220 REM
230 REM SELECT INPUT OR OUTPUT
240 REM
250 PRINT "Input or Output ";
260 TRAP 250:INPUT IO$
270 IF IO$(1,1)="I" THEN F=0:GOTO 340
280 IF IO$(1,1)="O" THEN F=255:GOTO 340
290 GOTO 250
300 PRINT
310 REM
320 REM CONFIGURE THE PORT
330 REM
340 POKE PCTL,56
350 POKE PORT,F
360 POKE PCTL,60
370 PRINT :PRINT
380 REM
390 REM ENTER YOUR DATA
400 REM
410 IF IO$(1,1)="I" THEN PRINT "PORT IS
FORMATTED FOR INPUT":PRINT :GOTO 130
420 PRINT "NOW ENTER YOUR DATA"
430 PRINT "(ENTER A RETURN TO DO
ANOTHER PORT)"
440 INPUT DATA$:IF DATA$="" THEN PRINT
CHR$(125):GOTO 130
450 TRAP 530
460 REM
470 REM POKE DATA TO PORT/VERIFY IT
480 REM
490 POKE PORT,VAL(DATA$)
500 PRINT "VERIFY ";PEEK(PORT)
510 GOTO 440

```

520 END

530 TRAP 40000:PRINT "INPUT ERROR,
RE-ENTER ";GOTO 440



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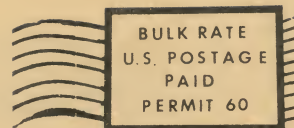
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